



# *Customer perspective: Results of the European G4V Survey*

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# Agenda



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## Customer perspective: Results of the European G4V survey

1. Objective
2. Methodology / approach
3. Key results from the customer survey
4. Conclusions



# Objective



- Although discussions about technical parameters prevail, **user preferences play a large role in the success** of the introduction of electric vehicles
  - In order for EVs to reach the mass-market they need to correspond with the requirements of the majority of drivers
  - People are used to routines – how are those routines affecting the intended infrastructure rollout?
- Thus, **understanding needs to be developed** for the associated social aspects and challenges related to the introduction of EVs
  - Provides feedback for infrastructure planning and optimization of business models
- Research **focus on customer preferences and acceptance** for:
  - Choice of charging location
  - Delayed charging (off-peak)
  - Vehicle-to-Grid (V2G) services



# Methodology/approach



- Web-based survey
  - It was decided to focus on the **intended behaviour** of the 'general public'
- Limited knowledge among respondents about characteristics of EVs and charging issues
  - **Information (in lay language) provided** within survey
  - Agreed technical data: 120 km range, 4h standard charging, charging costs € 3 (private) vs. € 5 (public)
  - 8 Countries: DE, FR, IT, NL, SE, ES, UK, PT
- Survey **distribution via G4V website** and project partners in respective countries
  - **1900** replies in total
  - **Perfect statistical sample not possible** within G4V – but provides already useful directions



Hello,

Welcome to this questionnaire about electric cars. This anonymous questionnaire will give you the opportunity to indicate your preferences related to electric cars. It is open for everybody living in the European Union (above the age of 18) no matter how much you know about electric cars. Answering the questions will only take 10-15 minutes of your time and will be anonymous. It will take you just some clicks.



Olá

Bem-vindo a este questionário sobre carros eléctricos. Este questionário anónimo solicita a sua informação sobre preferências relacionadas com carros eléctricos. É um questionário para todas as pessoas a viver na União Europeia (com idade superior a 18 anos) independentemente do conhecimento prévio sobre carros eléctricos. Este questionário demorará apenas entre 10 a 15 minutos a preencher na sua totalidade e exigirá apenas alguns clicks.

As suas respostas terão grande valor para nós e por isso agradecemos em antemão o tempo dedicado.

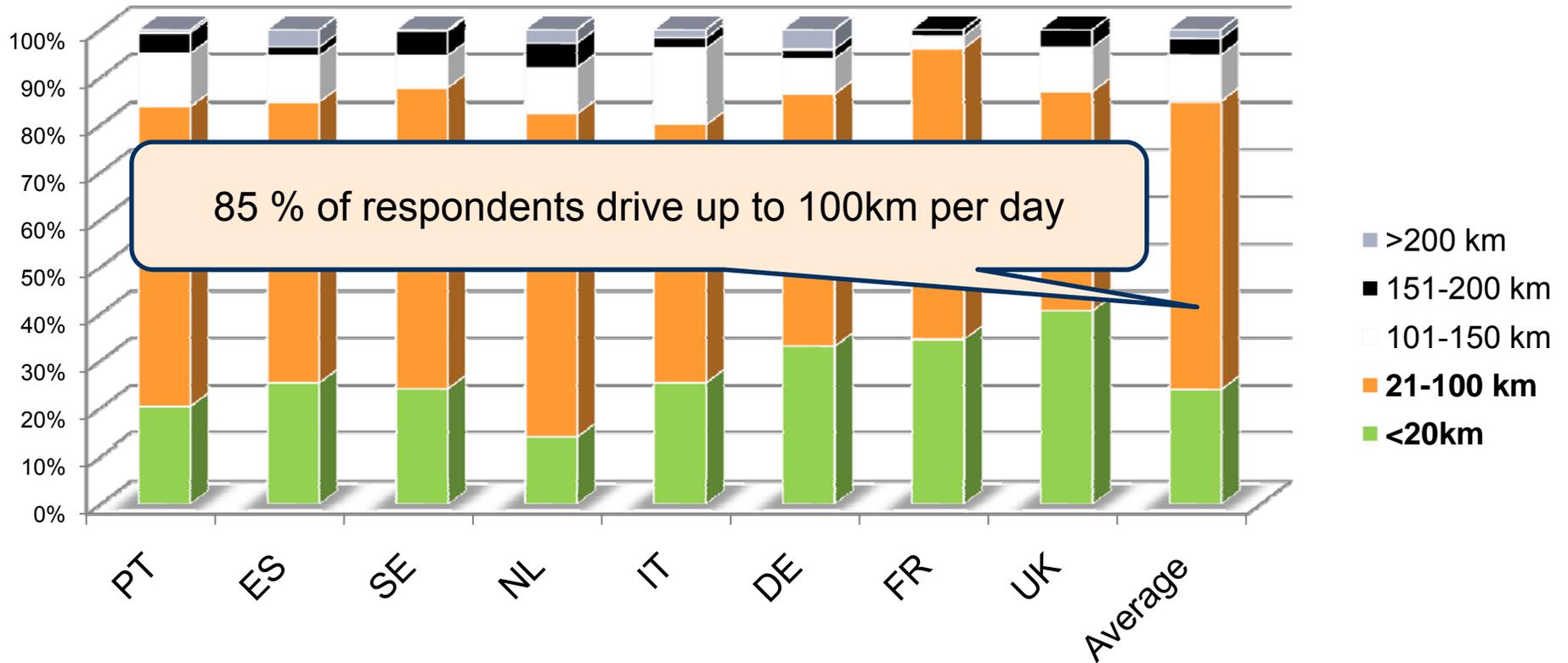
A equipa do questionário

\*Este questionário é parte do projecto Europeu Grid for Vehicles – G4V – sobre o carregamento de veículos eléctricos, e é financiado pela Comissão Europeia. Mais informação sobre o projecto encontra-se em [www.g4v.eu](http://www.g4v.eu). Os resultados deste questionário serão também publicados neste site de 2011.

Próximo



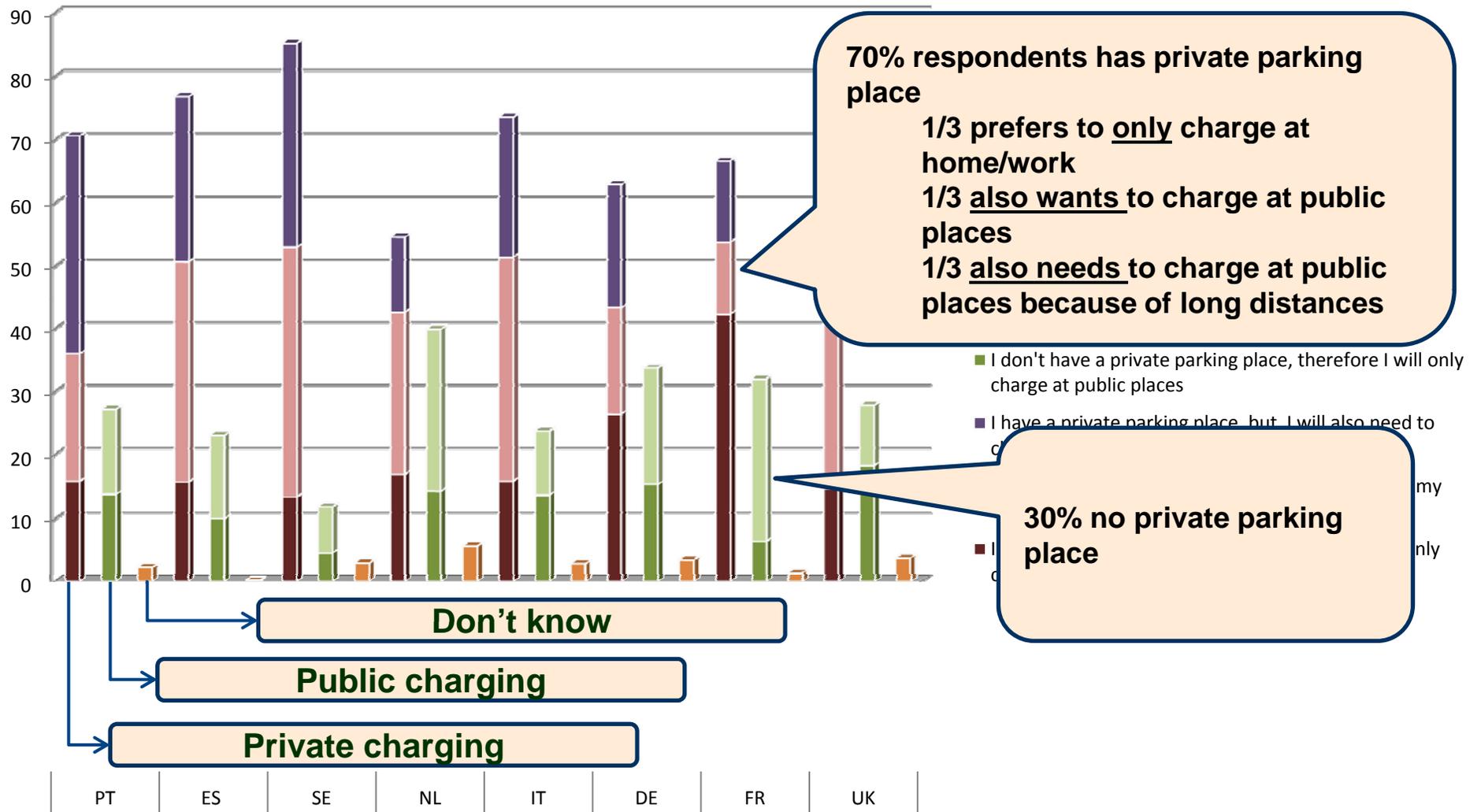
# Key results: Current daily mileage



**BUT:** required battery capacity to be interested in buying EV: 308km (NL 389km)!

People take into account the occasional longer trip

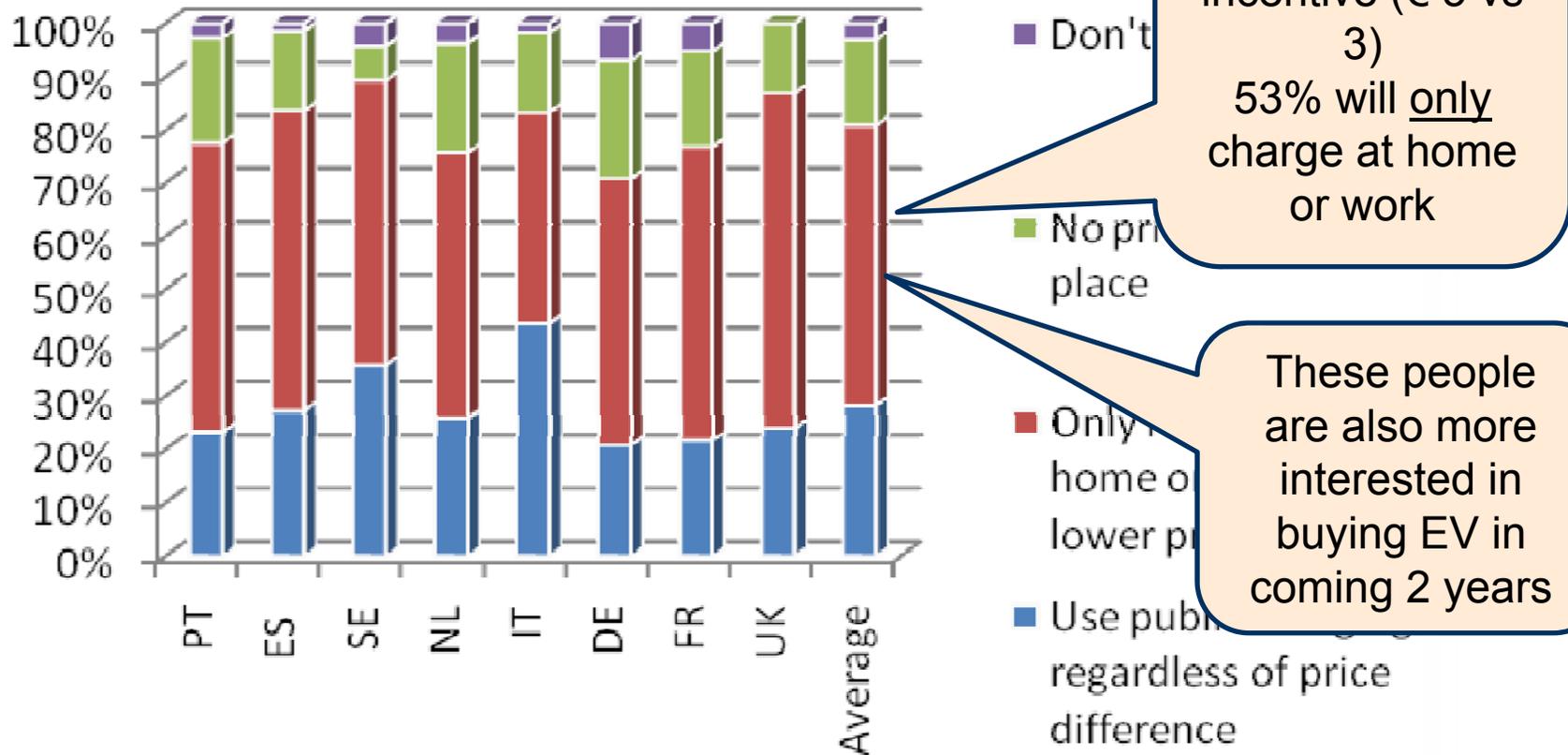
# Key results: Preferred charging location



# Key results: Preferred charging location



## Charging with price incentive



With price incentive (€ 5 vs 3)  
53% will only charge at home or work

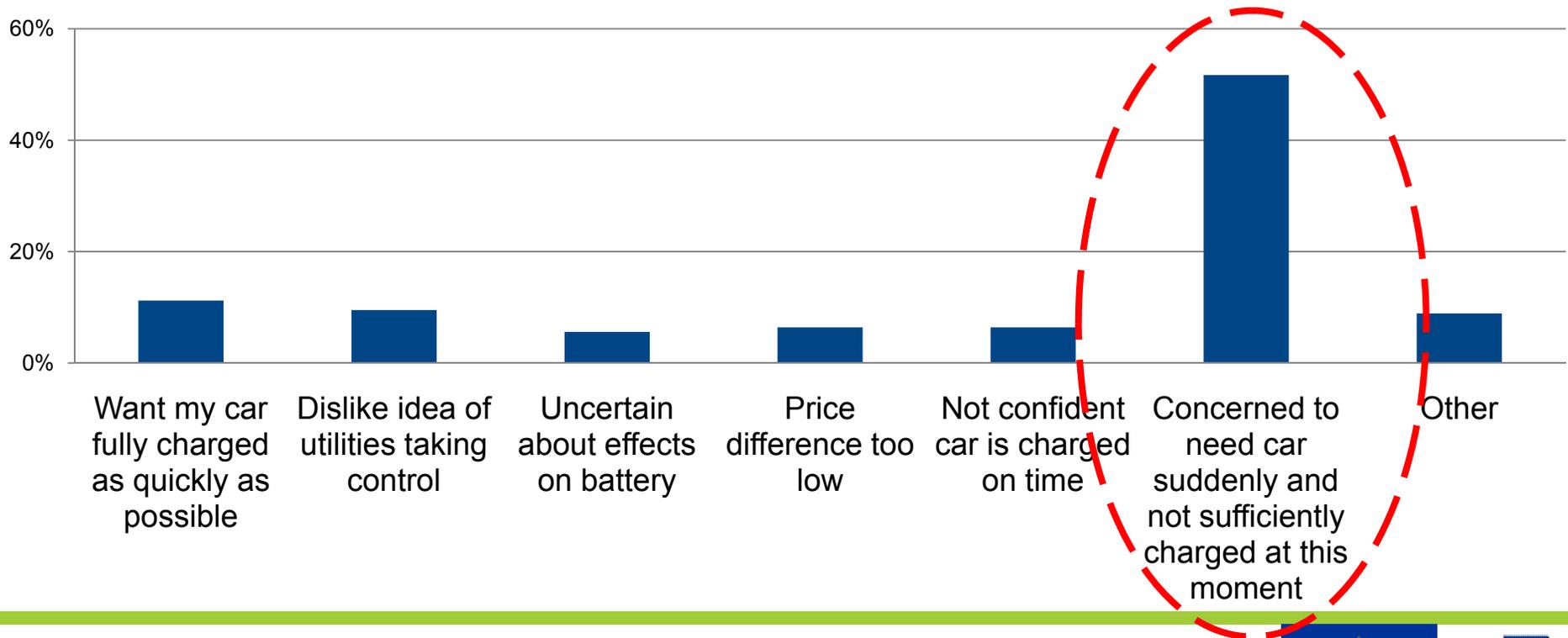
These people are also more interested in buying EV in coming 2 years



# Key results: Interest in delayed charging (with price incentive)



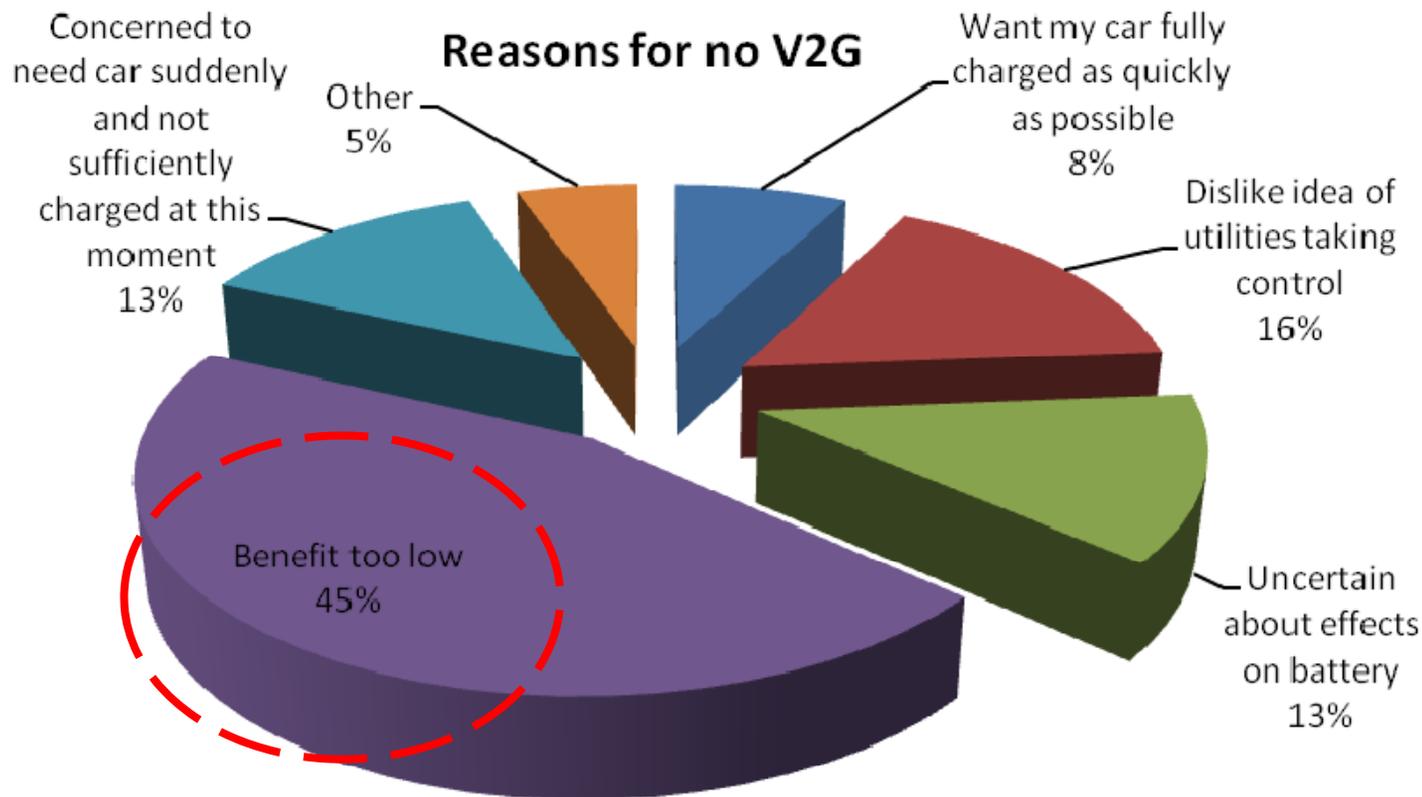
- **Charging would not start right away** after connecting the EV to the grid
- Delayed charging (22:00-06:00, battery full in the morning, €2 vs. €3)
- On average **high interest** in delayed charging (5.74 on 1-7 scale)
- Reasons for not being interested: (everyone ticking 4 and lower on scale):



# Key results: Vehicle-2-Grid

Young people & respondents (currently) without car, most interested

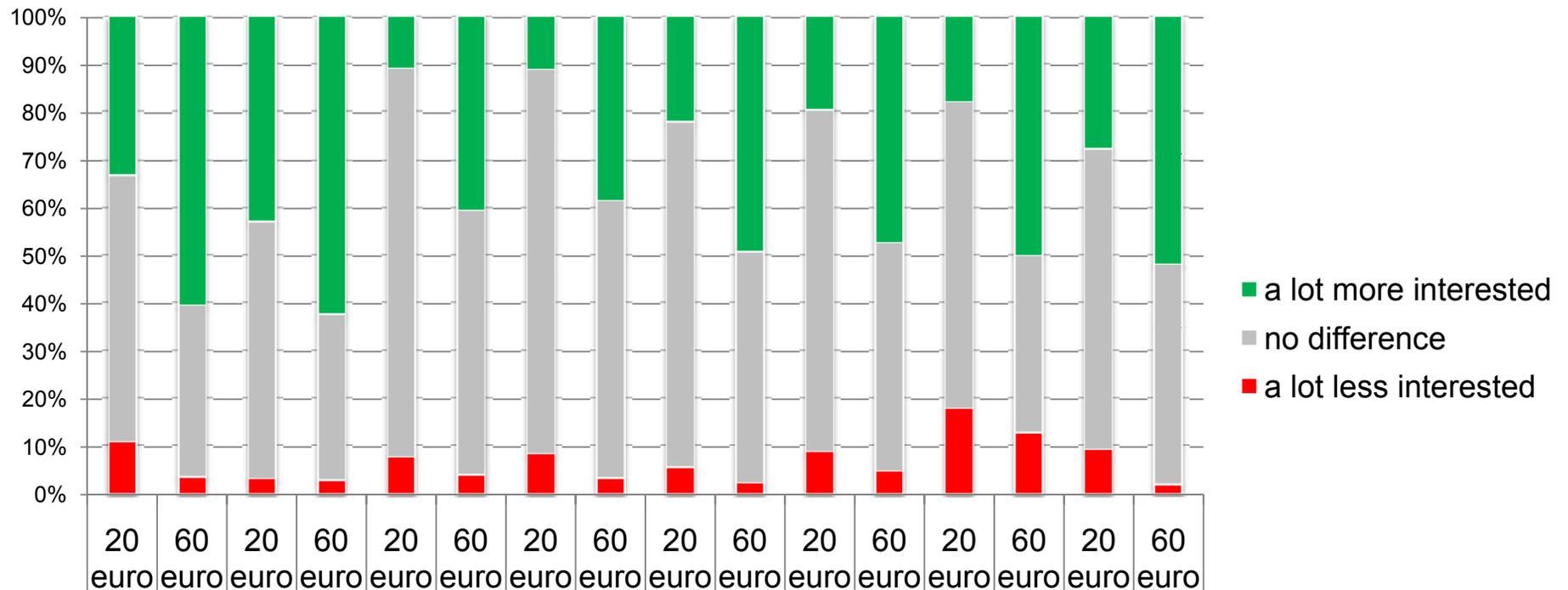
- V2G: unload & recharge whenever plugged in
- Least interest compared to delayed charging (4.4 on 1-7 scale)



# Key results: Interest in V2G – Impact of price incentives



- Interest to participate in V2G services with price incentive of € 20 and € 60 / year:

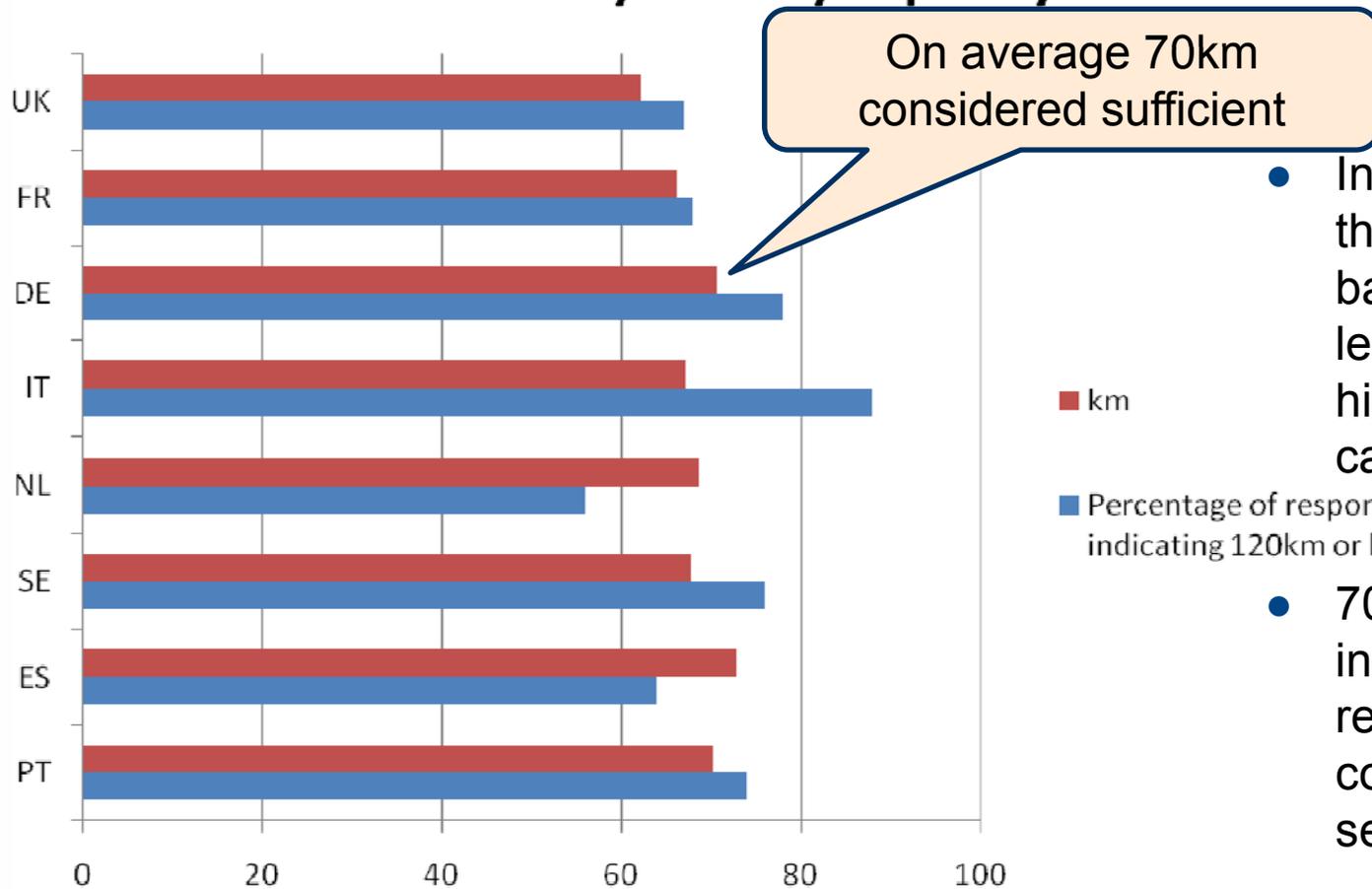


Impact of incentives clearly vary depending on economic circumstances (e.g. GDP/capita)



# Key results: V2G – remaining battery capacity

## Stand-by battery capacity



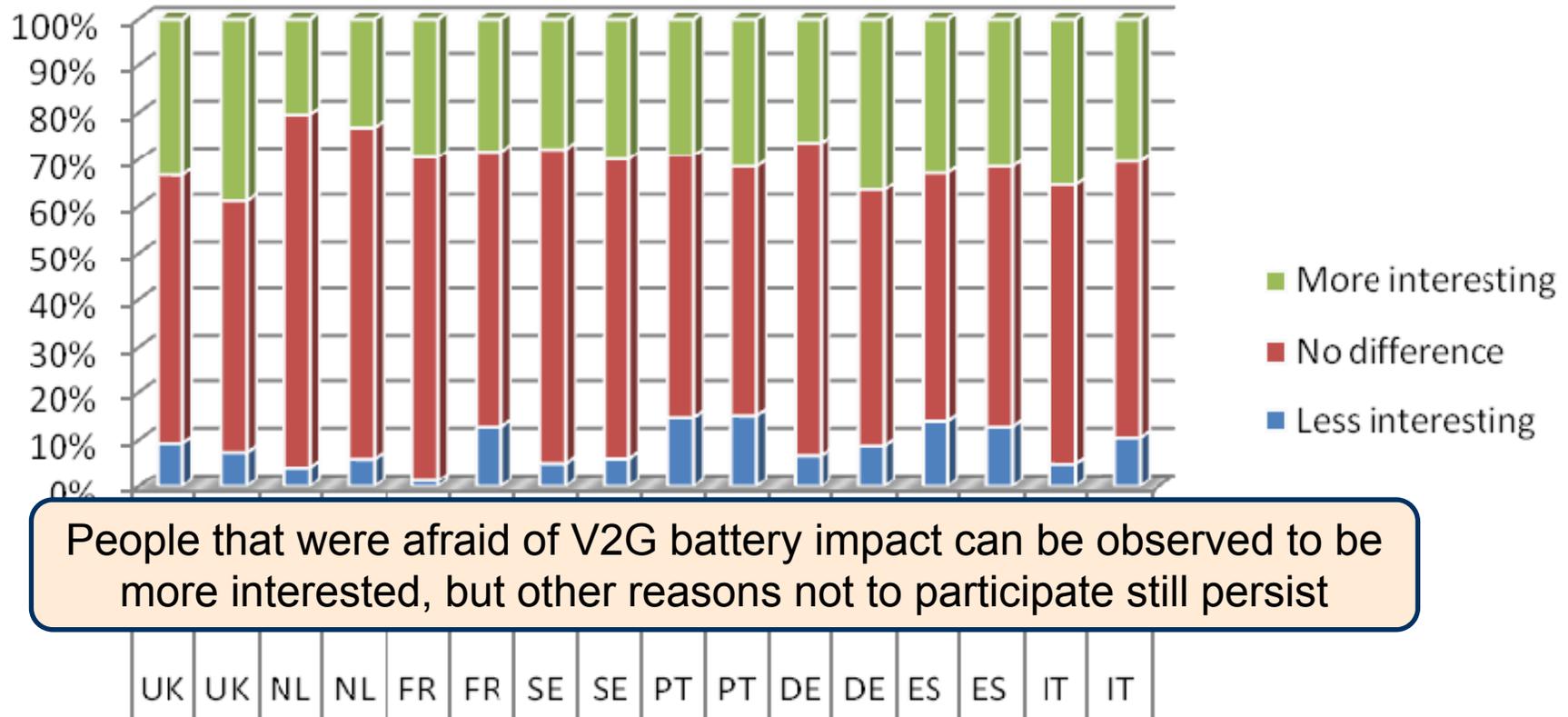
On average 70km considered sufficient

- Includes only people that indicated 120km battery capacity or less (i.e. others have higher desired capacity)
- 70km = provides indication which remaining capacity could be used for services

# Key results: Impact of leased battery



## Impact of leased battery



People that were afraid of V2G battery impact can be observed to be more interested, but other reasons not to participate still persist



# Conclusions



- For mass roll-out of EV it is important that the **anxiety/fear of the people** living in urban areas of being stranded due to lack of recharging infrastructure **should be mitigated.**
  - Facilitate **roll-out of public recharging** infrastructure in cities.
- People **prefer home recharging whenever possible** mainly due to convenience and safety reasons. Even people that don't have a private parking place at the moment indicate strong interest in home recharging.
  - Provide **technical support for convenient home recharging** (e.g. through refurbishment of existing installation or Wall-Box)
  - **Support public charging infrastructure to improve user confidence** that they will have adequate access to charging facilities even when away from home/private places.



# Main conclusions from the customer survey



- People are **interested in off-peak charging schemes** (22:00-06:00) with a price incentive compared to normal charging cost.
- Biggest reason for not participating in off-peak charging schemes is the **fear of being unable to travel** when car is needed for any unforeseen reason.
  - Support those charging strategies that best support the system by means of user advantageous tariff structure and assurance of user control over minimum standby battery capacity.
- **Low user acceptance** is observed for participation in **Vehicle-to-Grid** scheme (V2G, bidirectional communication) with main reason being low benefits and the inability to travel (due to empty battery) for any unforeseen reasons.
  - **Financial benefits for the user to join V2G** schemes have to be substantial enough taking into account the different economic conditions across different countries in Europe.



In case of any questions regarding the survey, please contact:

**Research on user acceptance continues within the Green eMotion project (WP9), based on real-life experiences from demo projects.**

**Download the full report about the European survey:**

**<http://www.ecn.nl/docs/library/report/2011/o11030.pdf>**